Core Review answers:

1. 1. Both distributions of reading scores are unimodal and skewed left. The 4th graders have a higher median score (30) than the 7th graders median score (26). The 4th grade scores are more spread with an IQR of 14.5 than the 7th graders with an IQR of 13. The range of the 4th graders is (12, 42), which is smaller than the range of the 7th graders, which is (1, 36). Neither distribution has an outlier.
   2. 4th graders: 7th graders:

IQR = 14 IQR = 13

LF = 21 - (1.5\*14) LF = 19 - (1.5\*13)

UF = 35 + (1.5\*14) UF = 32 + (1.5\*13)

(0, 56) (0.5, 51.5)

No outliers No outliers

* 1. N(24.09, 5.83)

P(X > 33) = normalcdf(33, E99, 24.09, 5.83) = 0.06322 = 6.322%



Ho: µd = 0 µd = regular - premium

Ha: µd < 0

Conditions:

1. SRS 1) assumed cars are representative of all cars in the fleet
2. Paired data 2) the 2 sets of data were recorded on the sample cars
3. Pop > 10n 3) There are more than 100 cars in the fleet
4. Normal pop of differences 4) the normal probability plot of the differences is approx. linear 🡪

Or nd > 30 normal pop of differences.

Conditions met 🡪 use Student’s t-distribution 🡪 1 sample **PAIRED** t-test

t = = -4.472

P(t < -4.472| df = 9) = 7.749 x 10-4

We reject Ho because p-value of 7.749 x 10-4 < alpha = 0.01. We have sufficient evidence that the average difference in the mpg of regular and premium gas less than 0. Therefore, there is evidence that the cars do get better fuel economy with premium gas.